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EXAMINER	
MOERSCHELL, RICHARD P	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,187	KIRSTEIN ET AL.	
	Examiner	Art Unit	
	RICHARD MOERSCHELL	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/22/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Responsive to communication entered 7/30/2008.

Status of Claims

Claims 1-16 are pending.

Priority

This application, 10/599187 filed 7/30/2008, is a 371 of PCT/IB2004/000953 filed 3/3/2004.

Election/Restrictions

No restrictions were made in this application

Information Disclosure Statement

The information disclosure statement, submitted on 9/22/2006, is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by **Fujikawa** (US 5101829).

1. Claim 1 recites "a means for reading out data from said sensor elements, and a means for converting said data into a transmittable form" wherein applicant has invoked means-plus-function claim language. Claim 2 recites "a means for transmitting said data from said chip to an external computer" wherein applicant has invoked means-plus-function claim language. The means-plus-function claim limitations are construed as covering the corresponding structure, material, or acts described in the specification and equivalents thereof. See *In re Donaldson Co.*, 29 USPQ2d 1845 (Fed. Cir. 1994).

2. Fujikawa discloses a semiconductor sensor for measure pressure pulse waves in blood vessels (col 2, ln 10-14) which is equivalent to a transducer integrated into a semiconductor chip as described by claim 1. Fujikawa discloses a plurality of semiconductor sensing elements (col 2, ln 55-59) which is equivalent to an array of transducer elements as described by claim 1. Fujikawa discloses an output terminal (col 2, ln 61-64) which is equivalent to a means for reading out data as described by claim 1. Fujikawa discloses a pulse wave detecting apparatus, a demultiplexer, a main device and microcomputer (col 8, ln 22 -65) which is a means for converting data to transmittable form as described by claim 1.

3. Fujikawa discloses an amplifier and A/D converter which supplies digital data to the control unit which is constituted of a microcomputer (col 8, ln 37-

45) which is a means for transmitting data from the chip to an external computer as described by claim 2.

4. Fujikawa discloses a sensor element which communicates with a pressurized fluid supply device (col 5, ln 9-15) having stain sensitive resistive elements (col 5, ln 20-25; col 7, ln 20-25) connected to a diaphragm (col 7, ln 20-25) which is equivalent to resistive sensor having strain sensitive resistors on a flexible structure of cross-linked beams a flexible protective membrane a fluid gap connected to openings as described by claim 5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) as applied to claim 1, in view of **Boute** et al (US 4601291).

5. Fujikawa discloses the chip, array, means for reading out data and a means for converting data as described above. Fujikawa fails to disclose a CMOS chip. Boute discloses a chip made of a CMOS structure for use with a pacemaker (col 3, ln 60-68) which is equivalent to the CMOS chip as described by claim 3. Furthermore, **Boute** discloses that due to the structure of CMOS, it offers the design advantages of wide operating temperature range, relatively high speed, high noise immunity and in particular low power consumption. It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a CMOS chip taught by Boute et al with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the CMOS chips as taught by Boute with the semiconductor device as taught

by Fujikawa because it would be desirable to have the design advantages of wide operating temperature range, relatively high speed, high noise immunity and in particular low power consumption as taught by Boute.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) as applied to claim 1, in view of **Park** et al (US 4425799).

6. Fujikawa discloses the limitations of claim 1, but fails to disclose a fluid filled capacitive sensor. Park discloses a fluid filled capacitive sensor for measuring pressure (abstract) having a flexible membrane (col 1, ln 49-53), a rigid plate such as glass (col 1, ln 59-63), and a space filled with fluid (col 1, ln 45-50) connected to an opening (col 4, ln 1-6) which is equivalent to a fluid filled capacitor having a sensor element comprising a fluid-filled capacitive sensor having a flexible electrode or membrane, a rigid electrode, and a fluid gap connected to an opening as described by claim 4. Furthermore, **Park** discloses that the filled transducer overcomes undesired departures from linearity and temperature stability (col 2, ln 19-21). It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a fluid filled capacitive sensor taught by Park with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the fluid filled capacitive sensor as taught by Park with the pressure transducer as taught by Fujikawa because it would be desirable to overcome undesired departures from linearity and temperature stability as taught by Park.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) and **Park** et al (US 4425799) as applied to claim 4, in further view of **Orr** et al (US PGP 2002/0162397)

7. Fujikawa discloses the limitations of claim 1, but fails to disclose sensor elements arranged with adjacent openings located in the center of the array. Orr discloses a device having a pair of pressure sensor elements with openings (Fig 2, items 25 and 35) disposed near the center of the device which is equivalent to sensor elements arranged with adjacent openings located in the center of the array as described by claim 8. Furthermore, **Orr** discloses the pressure ports facilitate formation and maintenance of a fluid tight seal (para 19). It would have been obvious to one of ordinary skill in the art to combine the prior art elements of pressure sensor element openings taught by Orr with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the pressure sensor element openings as taught by Orr with the pressure transducer as taught by Fujikawa because it would be desirable to facilitate formation and maintenance of a fluid tight seal as taught by Orr.

Claims 6, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) as applied to claim 1, in view of **Eckerle** (4269193).

8. Fujikawa discloses the limitations of claim 1, but fails to disclose sensor elements arranged in a square. Eckerle discloses a substantially square array of pressure transducer elements (Fig 3) used to measure blood pressure which is equivalent to the sensor elements arranged in a square array as described by claim 6. Furthermore, **Eckerle** discloses that by use of the array transducers which most closely track the true blood pressure can be further refined. It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a transducer array taught by Eckerle with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the transducer array as taught by Eckerle with the transducers as taught by Fujikawa because it would be desirable to more closely track the true blood pressure as taught by Eckerle.

9. With respect to claim 7, Eckerle discloses an array of more than 2 x 2 transducers (Fig 3), which is equivalent to an array comprising at least 2 x 2 sensor elements as described by claim 7.

10. With respect to claim 9, Eckerle discloses an array where the transducer elements are disposed towards on end of a chip (Fig 3), which is equivalent to an array of sensor elements placed close to one end of the semiconductor chip as described by claim 9.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) as applied to claim 1, in view of **Ballyns** (US 5119066).

11. Fujikawa discloses the limitations of claim 1, but fails to disclose a chip with a sensing device and power source. Ballyns discloses a pressure sensor device having a pressure sensitive transmitter and battery (col 6, ln 60-65) which is equivalent to a semiconductor chip that is part of a sensing device further including a power source as described by claim 10. Furthermore, **Ballyns** discloses that an advantage over structures previously described is that the printed circuit board can be manufactured in a substantially conventional manner (col 18, ln 39-45). It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a printed circuit board having a pressure sensor and battery as taught by Ballyns with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the structure having the battery and pressure transmitter as taught by Ballyns with the blood pressure transducer as taught by Fujikawa because it would be desirable to have a device that can be manufactured in a substantially conventional manner as taught by Ballyns.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) as applied to claim 1 and 2, in view of **Khair** (US 6533729).

12. Fujikawa discloses the limitations of claim 1, but fails to disclose a wireless transmission means to an external computer. Khair discloses a wireless transceiver for sending blood pressure data to a base unit where the sensor may

include a microcontroller (col 4, ln 12-22) where the base unit can be coupled to a computer (col 3, ln 15-29) which is equivalent to wherein an interface means for transmitting data from a chip to an external computer is a wireless means as described by claim 11. Furthermore, Khair discloses the advantage of a convenient, non-obtrusive, wearable device for accurate and reliable continuous non-invasive blood pressure monitoring (col 3, ln 15-29). It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a wireless means for transmitting blood pressure data taught by Khair with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the pressure sensor device with the wireless transceiver as taught by Khair with the blood pressure transducer as taught by Fujikawa because it would be desirable to have a convenient, non-obtrusive, wearable device for accurate and reliable continuous non-invasive blood pressure monitoring as taught by Khair.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) in view of **Eckerle** (4269193).

13. Claim 12 recites "a means for reading out data from said sensor elements, means for converting said data, and means for interfacing with external evaluation means" wherein applicant has invoked means-plus-function claim language. The means-plus-function claim limitations are construed as covering the

corresponding structure, material, or acts described in the specification and equivalents thereof. See *In re Donaldson Co.*, 29 USPQ2d 1845 (Fed. Cir. 1994).

14. Fujikawa discloses an output terminal (col 2, ln 61-64) which is equivalent to a means for reading out data as described by claim 12. Fujikawa discloses a pulse wave detecting apparatus, a demultiplexer, a main device and microcomputer (col 8, ln 22 -65) which is a means for converting data to transmittable form as described by claim 12. Fujikawa discloses an amplifier and A/D converter which supplies digital data to the control unit which is constituted of a microcomputer and a cable (col 8, ln 34-45) which is a means for interfacing with an external evaluation unit as described by claim 12. Fujikawa fails to disclose a sensor array. Eckerle discloses an array of more than 2 x 2 transducers (Fig 3) which are placed over arteries (col 2, ln 19-34), which is equivalent to an array overlying a blood vessel as described by claim 12. Furthermore, **Eckerle** discloses that by use of the array transducers which most closely track the true blood pressure can be further refined. It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a transducer array taught by Eckerle with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the transducer array as taught by Eckerle with the transducers as taught by Fujikawa because it would be desirable to more closely track the true blood pressure as taught by Eckerle.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) and **Eckerle** (4269193) as applied to claim 12, in further view of **Ballyns** (US 5119066) and **Khair** (US 6533729).

15. Claims 13 recites "wireless means for interfacing with the external evaluation means" wherein applicant has invoked means-plus-function claim language. The means-plus-function claim limitations are construed as covering the corresponding structure, material, or acts described in the specification and equivalents thereof. See *In re Donaldson Co.*, 29 USPQ2d 1845 (Fed. Cir. 1994).

16. Fujikawa discloses the limitations of claim 12, but fails to disclose power source on the sensing device and a wireless means for interfacing with an external evaluation means. Ballyns discloses a pressure sensor device having a pressure sensitive transmitter and battery (col 6, ln 60-65) which is equivalent to a power source on the sensing device as described by claim 13. Furthermore, **Ballyns** discloses that an advantage over structures previously described is that the printed circuit board can be manufactured in a substantially conventional manner (col 18, ln 39-45). Khair discloses a wireless transceiver for sending blood pressure data to a base unit where the sensor may include a microcontroller (col 4, ln 12-22) where the base unit can be coupled to a computer (col 3, ln 15-29) which is equivalent to wherein an interface means for transmitting data from a chip to an external computer is a wireless means as described by claim 13. Furthermore, **Khair** discloses the advantage of a convenient, non-obtrusive, wearable device for

accurate and reliable continuous non-invasive blood pressure monitoring (col 3, ln 15-29).

17. It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a printed circuit board having a pressure sensor and battery as taught by Ballyns with the teachings of Fujikawa according to known methods to yield predictable results. It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a wireless means for transmitting blood pressure data taught by Khair with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the structure having the battery and pressure transmitter as taught by Ballyns with the blood pressure transducer as taught by Fujikawa because it would be desirable to have a device that can be manufactured in a substantially conventional manner as taught by Ballyns. One of ordinary skill in the art would have been motivated to use the pressure sensor device with the wireless transceiver as taught by Khair with the blood pressure transducer as taught by Fujikawa because it would be desirable to have a convenient, non-obtrusive, wearable device for accurate and reliable continuous non-invasive blood pressure monitoring as taught by Khair.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829), in view of .**Boute** et al (US 4601291) and **Wanlass** (US 4425516).

18. Claims 14 recites "means for converting, and means for transmitting said data to external evaluation means" wherein applicant has invoked means-plus-function claim language. The means-plus-function claim limitations are construed as covering the corresponding structure, material, or acts described in the specification and equivalents thereof. See *In re Donaldson Co.*, 29 USPQ2d 1845 (Fed. Cir. 1994).

19. Fujikawa discloses the chip, array, means for reading out data and a means for converting data as described above. Fujikawa fails to disclose a CMOS chip and a method of making the chip. Boute discloses a chip made of a CMOS structure for use with a pacemaker (col 3, ln 60-68) which is equivalent to the CMOS chip as described by claim 14. Furthermore, **Boute** discloses that due to the structure of CMOS, it offers the design advantages of wide operating temperature range, relatively high speed, high noise immunity and in particular low power consumption. Wanlass discloses a method for fabricating a chip (col 13, ln 35-52), which is equivalent to fabricating a semiconductor chip as described by claim 14. Furthermore, **Wanlass** discloses the benefits of low power consumption associated with CMOS technology (col 2, ln 1-5) and the benefit of a method that facilitates fabricating a circuit as a monolithic IC structure (col 5, ln 15-18).

20. It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a CMOS chip taught by Boute et al with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the CMOS chips as

taught by Boute with the semiconductor device as taught by Fujikawa because it would be desirable to have the design advantages of wide operating temperature range, relatively high speed, high noise immunity and in particular low power consumption as taught by Boute. It would have been obvious to one of ordinary skill in the art to combine the prior art elements of CMOS technology fabrication taught by Wanlass with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the method for fabricating CMOS chips as taught by Wanlass with the transducer array as taught by Fujikawa because it would be desirable to have the benefits of a low power consumption device and a method that facilitates fabricating a circuit as a monolithic IC structure as taught by Wanlass.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujikawa** et al (US 5101829) in view of **Miele** et al (US PGP 2002/0055680).

21. Fujikawa discloses a method for detecting pressure in blood vessel (col 5, ln 17-34). Fujikawa fails to disclose a method for extracting directional information and characteristic signals as described by claim 15. Miele discloses an apparatus and method for measuring pressure using pressure sensors (abstract, para 16) and locating blood vessels (para 160) which is equivalent to extracting directional information from said continuous blood pressure measurement data to locate arteries and/or veins as described by claim 15. Miele discloses a method to locate other blood vessels such as veins (para 168) which is equivalent to extracting

characteristic signal features from said continuous blood pressure measurement data to differentiate between arteries and veins. Furthermore Miele discloses a method that advantageously provides a technique for locating blood vessels (para 159) and that has an angular position insensitivity that advantageously provides consistent results (para 94).

22. With respect to claim 16, Miele discloses a method using pressure or ultrasound transducers (abstract) and mapping a vessel along the neck to maintain a monitoring or treatment device at a predetermined position (para 159), which is equivalent to continuously and noninvasively measuring and monitoring blood pressure in a blood vessel the method comprising the steps of: producing a map pattern of said continuous blood pressure measurement data to identify abrupt features, in particular blockages due to calcification inside arteries and veins as described by claim 16.

23. It would have been obvious to one of ordinary skill in the art to combine the prior art elements of a method for locating blood vessels as well as veins taught by Miele with the teachings of Fujikawa according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to use the prior art elements of a method for locating blood vessels as well as veins as taught by Miele with the method for detecting pressure in blood vessels as taught by Fujikawa because it would be desirable to have a method that advantageously provides a technique for locating blood vessels and that has an angular position insensitivity that advantageously provides consistent results as taught by Miele.

Conclusion

Claims 1-16 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICHARD MOERSCHELL whose telephone number is (571)270-3784. The examiner can normally be reached on Monday - Friday 8 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on 571-272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RM

/Nelson Yang/

Primary Examiner, Art Unit 1641